

Amendments to the Claims

1-12. (Canceled)

13. (New) A method comprising:

extracting at least one field from a data packet;

determining a flow table index value using said at least one field;

identifying a flow table entry using said flow table index value wherein said flow table entry comprises

a first field associated with a rate credit value, and

a second field associated with a buffer count value; and

processing said packet using said rate credit value and said buffer count value.

14. (New) The method of claim 13, wherein

said rate credit value represents a transfer rate of a flow associated with said flow table entry, and

said buffer count value represents quantity of memory space allocated to said flow associated with said flow table entry.

15. (New) The method of claim 14, further comprising:

periodically incrementing said credit value by an increment.

16. (New) The method of claim 15, wherein said periodically incrementing

comprises:

periodically incrementing said credit value by an increment up to a predetermined maximum value.

17. (New) The method of claim 15, wherein

said at least one field comprises a set of fields, and

said determining said flow table index value comprises determining said flow table index value using a subset of said set of fields.

18. (New) The method of claim 15, wherein

said flow table index value belongs to a first set of values, and

a maximum number of values in said first set of values is less than a maximum number of possible flows.

19. (New) The method of claim 15, wherein said at least one field from a data packet comprises a source address field and a destination address field.
20. (New) The method of claim 19, wherein said determining said flow table index value comprises at least one of:
- adding said source address field to said destination address field;
 - performing an exclusive OR (XOR) operation using said source address field and said destination address field as operands; and
 - adding said source address field to said destination address field to form a sum and performing a bit-wise shift operation on at least a portion of said sum.
21. (New) The method of claim 15, wherein said at least one field comprises a plurality of fields, and said determining said flow table index value comprises at least one of:
- hashing data of said plurality of fields, and
 - concatenating data of said plurality of fields.
22. (New) The method of claim 13, further comprising:
- performing said determining, said identifying, and said processing in response to a determination that data packet comprises a voice packet.
23. (New) The method of claim 22, wherein said identifying a flow table entry comprises:
- identifying a flow table entry within a voice flow table.
24. (New) The method of claim 22, wherein said identifying a flow table entry comprises:
- identifying a flow table entry within a voice portion of a flow table.
25. (New) The method of claim 15, wherein said processing comprises at least one of:
- enqueueing said data packet;
 - modifying said data packet; and
 - dropping said data packet.

26. (New) The method of claim 25, wherein said processing further comprises: comparing a size value associated with said data packet to said rate credit value; and comparing said buffer count value to a buffer limit value.
27. (New) The method of claim 26, wherein said processing further comprises: dropping said data packet in response to a determination that said buffer count value is greater than said buffer limit value.
28. (New) The method of claim 26, wherein said processing further comprises: dropping said data packet in response to a determination that said size value associated with said data packet is greater than said rate credit value.
29. (New) The method of claim 26, further comprising: decrementing said rate credit value by said size value associated with said data packet in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.
30. (New) The method of claim 25, wherein said processing further comprises: comparing a size value associated with said data packet to said rate credit value; determining a buffer limit value in response to said comparing said size value associated with said data packet to said rate credit value; and comparing said buffer count value to said buffer limit value in response to said determining said buffer limit value.
31. (New) The method of claim 30, wherein said determining said buffer limit value comprises:
determining a buffer limit value in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.
32. (New) The method of claim 31, wherein said determining said buffer limit value further comprises:
determining a reduced buffer limit in response to a determination that said size value associated with said data packet is greater than said rate credit value.

33. (New) An apparatus comprising:
means for extracting at least one field from a data packet;
means for determining a flow table index value using said at least one field;
means for identifying a flow table entry using said flow table index value wherein
said flow table entry comprises
a first field associated with a rate credit value, and
a second field associated with a buffer count value; and
means for processing said packet using said rate credit value and said buffer count
value.
34. (New) The apparatus of claim 33, wherein
said rate credit value represents a transfer rate of a flow associated with said flow
table entry, and
said buffer count value represents quantity of memory space allocated to said flow
associated with said flow table entry.
35. (New) The apparatus of claim 34, further comprising:
means for periodically incrementing said credit value by an increment.
36. (New) The apparatus of claim 35, wherein said means for periodically
incrementing comprises:
means for periodically incrementing said credit value by an increment up to a
predetermined maximum value.
37. (New) The apparatus of claim 35, wherein
said at least one field comprises a set of fields, and
said means for determining said flow table index value comprises means for
determining said flow table index value using a subset of said set of fields.
38. (New) The apparatus of claim 35, wherein
said flow table index value belongs to a first set of values, and
a maximum number of values in said first set of values is less than a maximum
number of possible flows.
39. (New) The apparatus of claim 35, wherein said at least one field from a data
packet comprises a source address field and a destination address field.

40. (New) The apparatus of claim 39, wherein said means for determining said flow table index value comprises at least one of:

- means for adding said source address field to said destination address field;
- means for performing an exclusive OR (XOR) operation using said source address field and said destination address field as operands; and
- means for adding said source address field to said destination address field to form a sum and performing a bit-wise shift operation on at least a portion of said sum.

41. (New) The apparatus of claim 35, wherein said at least one field comprises a plurality of fields, and said means for determining said flow table index value comprises at least one of:

- means for hashing data of said plurality of fields, and
- means for concatenating data of said plurality of fields.

42. (New) The apparatus of claim 33, further comprising:
means for performing said determining, said identifying, and said processing in response to a determination that data packet comprises a voice packet.

43. (New) The apparatus of claim 42, wherein said means for identifying a flow table entry comprises:

- means for identifying a flow table entry within a voice flow table.

44. (New) The apparatus of claim 42, wherein said means for identifying a flow table entry comprises:

- means for identifying a flow table entry within a voice portion of a flow table.

45. (New) The apparatus of claim 35, wherein said means for processing comprises at least one of:

- means for enqueueing said data packet;
- means for modifying said data packet; and
- means for dropping said data packet.

46. (New) The apparatus of claim 45, wherein said means for processing further comprises:

means for comparing a size value associated with said data packet to said rate credit value; and

means for comparing said buffer count value to a buffer limit value.

47. (New) The apparatus of claim 46, wherein said means for processing further comprises:

means for dropping said data packet in response to a determination that said buffer count value is greater than said buffer limit value.

48. (New) The apparatus of claim 46, wherein said means for processing further comprises:

means for dropping said data packet in response to a determination that said size value associated with said data packet is greater than said rate credit value.

49. (New) The apparatus of claim 46, further comprising:

means for decrementing said rate credit value by said size value associated with said data packet in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.

50. (New) The apparatus of claim 45, wherein said means for processing further comprises:

means for comparing a size value associated with said data packet to said rate credit value;

means for determining a buffer limit value; and

means for comparing said buffer count value to said buffer limit value.

51. (New) The apparatus of claim 50, wherein said means for determining said buffer limit value comprises:

means for determining a buffer limit value in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.

52. (New) The apparatus of claim 51, wherein said means for determining said buffer limit value further comprises:

means for determining a reduced buffer limit in response to a determination that said size value associated with said data packet is greater than said rate credit value.

53. (New) A machine-readable medium having a plurality of instructions executable by a machine embodied therein, wherein said plurality of instructions when executed cause said machine to perform a method comprising:

extracting at least one field from a data packet;
determining a flow table index value using said at least one field;
identifying a flow table entry using said flow table index value wherein said flow table entry comprises
a first field associated with a rate credit value, and
a second field associated with a buffer count value; and
processing said packet using said rate credit value and said buffer count value.

54. (New) The machine-readable medium of claim 53, wherein
said rate credit value represents a transfer rate of a flow associated with said flow table entry, and
said buffer count value represents quantity of memory space allocated to said flow associated with said flow table entry.

55. (New) The machine-readable medium of claim 54, wherein
said flow table index value belongs to a first set of values, and
a maximum number of values in said first set of values is less than a maximum number of possible flows.

56. (New) The machine-readable medium of claim 54, wherein said processing further comprises:

comparing a size value associated with said data packet to said rate credit value;
determining a buffer limit value in response to said comparing said size value associated with said data packet to said rate credit value; and
comparing said buffer count value to said buffer limit value in response to said determining said buffer limit value.

57. (New) The machine-readable medium of claim 56, wherein said determining said buffer limit value comprises:

determining a buffer limit value in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.

58. (New) The machine-readable medium of claim 57, wherein said determining said buffer limit value further comprises:

determining a reduced buffer limit in response to a determination that said size value associated with said data packet is greater than said rate credit value.

59. (New) A data processing system comprising:

a buffer manager configured to receive a data packet; and

a controller coupled to said buffer manager and configured to,

extract at least one field from a data packet;

determine a flow table index value using said at least one field;

identify a flow table entry using said flow table index value wherein said flow table entry comprises

a first field associated with a rate credit value, and

a second field associated with a buffer count value; and

process said packet using said rate credit value and said buffer count value.

60. (New) The data processing system of claim 59, wherein

said rate credit value represents a transfer rate of a flow associated with said flow table entry, and

said buffer count value represents quantity of memory space allocated to said flow associated with said flow table entry.

61. (New) The data processing system of claim 60, wherein

said flow table index value belongs to a first set of values, and

a maximum number of values in said first set of values is less than a maximum number of possible flows.

62. (New) The data processing system of claim 60, wherein said controller is further configured to,
compare a size value associated with said data packet to said rate credit value;
determine a buffer limit value; and
compare said buffer count value to said buffer limit value.

63. (New) The data processing system of claim 62, wherein said controller is further configured to,
determine a buffer limit value in response to a determination that said size value associated with said data packet is less than or equal to said rate credit value.

64. (New) The data processing system of claim 63, wherein said controller is further configured to,
determine a reduced buffer limit in response to a determination that said size value associated with said data packet is greater than said rate credit value.

65. (New) An apparatus comprising:
means for parsing an incoming packet comprising a plurality of fields to generate an extracted plurality of fields;
means for transforming said extracted plurality of fields according to an algorithm to generate a result wherein said means for transforming comprises at least one of,
means for hashing data of said extracted plurality of fields, and
means for concatenating data of said extracted plurality of fields;
means for mapping said result according to a mapping function wherein the output of said mapping function is an index corresponding to a flow table entry;
means for reading the flow table entry identified by said index, said flow table entry containing at least a field identifying a credit value;
means for comparing said credit value to a quantity signifying insufficient credits;
means for processing or dropping the packet based on said comparing; and
means for periodically incrementing said credit value by an increment.

66. (New) The apparatus of claim 65, wherein said means for processing further comprises:

means for testing a size of the packet against said credit value;
means for decrementing said credit value by the size of the packet if the size is less than or equal to said credit value; and
means for setting said credit value to zero and dropping the packet if the size is greater than said credit value.

67. (New) The apparatus of Claim 65, wherein said means for processing further comprises:

means for enqueueing the packet if said credit value is greater than or equal to zero;
and
means for dropping the packet if said credit value is less than zero.

68. (New) A method comprising:

identifying an internetworking device comprising a flow table within a communications network, wherein said flow table comprises
a first field associated with a rate credit value, and
a second field associated with a buffer count value; and
transmitting a data packet within said communications network in response to said identifying.

69. (New) The method of claim 68, wherein said transmitting comprises:
transmitting said data packet within said communications network using said internetworking device.

70. (New) The method of claim 68, wherein
said rate credit value represents a transfer rate of a flow associated with said flow table entry, and
said buffer count value represents quantity of memory space allocated to said flow associated with said flow table entry.

71. (New) The method of claim 68, wherein said data packet comprises a voice packet, said method further comprising:
encoding a portion of a voice signal within said voice packet.

72. (New) The method of claim 68, further comprising:
receiving a traffic congestion notification message from said internetworking device.

73. (New) The method of claim 72, further comprising:
reducing a data packet transmission rate to said internetworking device in response to
said receiving.

74. (New) The method of claim 72, further comprising:
maintaining a data packet transmission rate to said internetworking device in response
to said receiving.